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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,887	03/29/2004	Hak-Sun Chang	YOM-0206	1078

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EXAMINER

VU, PHU

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 10/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/810,887

Applicant(s)

CHANG ET AL.

Examiner

Phu Vu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on 21 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

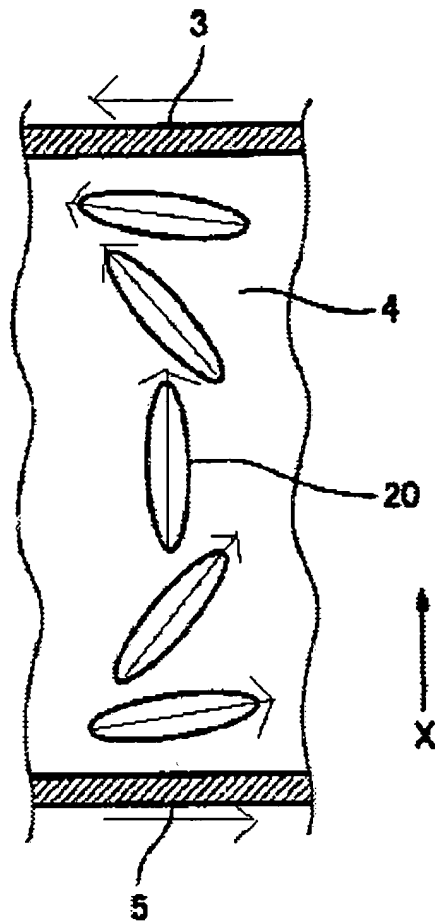
### ***Response to Arguments***

Applicant's arguments filed 7/21/06 have been fully considered but they are not persuasive.

Firstly, applicant has argued that the combination of Sato and Yamkita is improper because neither disclose black spacers in an OCB display. However the cited Sato reference does not have to teach as Sato teaches spacers for liquid crystal devices and appears to not be limited to any particular kind therefore the combination is valid as Sato teaches a spacer that is generic to any type of LCD display.

Furthermore applicant has also argued that the Sato does not teach any teaching of black spacers over white spacers however Sato does provide an explicit teaching of black spacers (see column 4 lines 22-25).

Applicant has also stated the reference does not teach liquid crystal that is arranged in antiparallel on both substrates. The reference discloses rubbing treatment such that the alignment layers are rubbed parallel to the signal lines (see column 10 lines 60-68) and align in the same direction on a particular substrate. Therefore in light of fig. 4B (see below) the liquid crystal must be aligned in antiparallel since they are parallel to the source lines at rubbed surfaces.



**FIG. 4B**

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

**Claims 24-27 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.**

The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Regarding claims 24-27, it is unclear the exact scope implied by claims 24-27. Claims 24-27 appear to suggest there is no alignment layer since the spacers contact the electrodes. If this is the case than it is not clear since the prior art OCB LCD devices disclose alignment layers and it is not apparent how the a LCD device functions without an alignment layer. If claims 24-27 are meant to claim subject matter pertaining to having no alignment layer than there is no support in the specification on achieving alignment without an alignment layer. The prior art rejection in view of Nakahara presumes "contact" can mean through an alignment layer.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claim 1-2, 5-7, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamakita 6661491 in view of Sato 4987012.**

**Regarding claims 1, 6 and, Yamakita 6661491 teaches a liquid crystal display with a common electrode (fig. 3 element 2) thereon; a liquid crystal layer (fig. 4a and 4b**

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element 4) injected between the upper and lower substrates (fig. 4b elements 3 and 5) and spacers (not shown in figs for this embodiment see column 10 lines 20-28; however shown in fig. 24 element 61), the spacers in the pixel region determining a gap (see fig. 24) between the upper and lower substrates and wherein the liquid crystal molecules are aligned antiparallel to each other (fig. 4B). The reference fails to teach the spacers being black or any color however, Sato teaches black spacers, that provided sharp and clear images (see column 4 lines 22-25). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to apply black spacers to provide sharp and clear pictures.

**Regarding claim 2 and 7**, Yamakita teaches a compensation film and polarizer (see fig. 107a and 106).

**Regarding claim 5 and 10**, the reference teaches the spacers of ball type (see claim 1 rejection).

**Claims 3-4 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamakita in view of Sato and further in view Motomura 6103323.**

**Regarding claim 3-4 and 8-9**, Yamakita and Sato disclose all the limitations of the claim except the slow axis of the polarizer making a 45 degree angle with the transmission axis of the polarizer. Motomura discloses making a 45 degree angle between the transmission axis of the polarizer and the slow axis of the retarder to improve lighting quality of polarized light (see column 15 lines 10-15). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to

make a 45 degree angle between the transmission axis of the polarizer and the slow axis of the retarder to improve lighting quality.

**Claims 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamakita in view of Sato and further in view of Bos US Patent No. 5410422.**

Yamakita and Sato teach all the limitations of claim 11 except a compensation layer that has a smaller dispersion of birefringence than the liquid crystal layer. Bos teaches a compensator birefringence with 60 to 85 percent the product of a cell gap distance and birefringence of the cell (dispersion birefringence of LC layer) to compensate for color shifting (see column 7 lines 46-65). Therefore, at the time of the invention, it would have been obvious to use a compensator with lower birefringence than the dispersion birefringence of the LC cell reduce color shifting the display.

**Claims 12-13, 16, 18-19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamakita in view of Sato and further in view of Watanabe 5617228.**

**Regarding claims 12 and 18,** Yamakita 6661491 teaches a liquid crystal display with a common electrode (fig. 3 element 2) thereon; a liquid crystal layer (fig. 4a and 4b element 4) injected between the upper and lower substrates (fig. 4b elements 3 and 5) and spacers (not shown in figs for this embodiment see column 10 lines 20-28; however shown in fig. 24 element 61) positioned between the upper and lower substrate and within a pixel region, the spacers in the pixel region determining a gap (see fig. 24) between the upper and lower substrates and wherein the liquid crystal molecules are aligned antiparallel to each other (fig. 4B). The reference fails to teach the spacers

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being black or any color however, Sato teaches black spacers, which would inherently have less than 3% transmission, that provided sharp and clear images (see column 4 lines 26-30). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to apply black spacers to provide sharp and clear pictures.

Yamakita and Sato fail to teach a number of spacers less than 90 in one square millimeter, however Watanabe teaches a ball type spacers of spacer density of 60 spacers/mm allows for smaller diameter spacers that does has no adverse affects to the display quality (column 13 line 65 – column 14 line 3). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to use a spacer density of 60/mm (less than 90 mm) in order to provide spacing without any adverse affects to the display quality.

**Regarding claims 13 and 19**, Yamakita teaches a compensation film and polarizer (see fig. 107a and 106).

**Regarding claim 16 and 22**, the reference teaches the spacers of ball type (see claim 12 rejection).

**Claims 14-15 and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamakita in view of Sato and further in view Motomura 6103323.**

**Regarding claim 14-15 and 20-21**, Yamakita and Sato disclose all the limitations of the claim except the slow axis of the polarizer making a 45 degree angle with the transmission axis of the polarizer. Motomura discloses making a 45 degree angle between the transmission axis of the polarizer and the slow axis of the retarder to

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improve lighting quality of polarized light (see column 15 lines 10-15). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to make a 45 degree angle between the transmission axis of the polarizer and the slow axis of the retarder to improve lighting quality.

**Claims 17, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamakita in view of Sato in view of Watanabe and further in view of Bos US Patent No. 5410422.**

Yamakita and Sato teach all the limitations of claim 11 except a compensation layer that has a smaller dispersion of birefringence than the liquid crystal layer. Bos teaches a compensator birefringence with 60 to 85 percent the product of a cell gap distance and birefringence of the cell (dispersion birefringence of LC layer) to compensate for color shifting (see column 7 lines 46-65). Therefore, at the time of the invention, it would have been obvious to use a compensator with lower birefringence than the dispersion birefringence of the LC cell reduce color shifting the display.

**Claims 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamakita in view of Sato in view of Watanabe and further in view of Nakahara 6724448.**

Regarding claims 24-27, the references fail to explicitly disclose a spacer contacting the electrodes, however Nakahara provides evidence that in LCD displays with spacers and alignment films there will be penetration through the alignment film due to the nature of the materials forming the spacers and the alignment layer (see abstract and column 3 lines 8-10). Alignment layers are soft in order to be rubbed while

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spacers are supporting fixtures and are therefore rigid thereby merely placing gap maintaining spacers in the device will result in contact between the spacers and the electrode.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phu Vu whose telephone number is (571)-272-1562.

The examiner can normally be reached on 8AM-5PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571)-272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Phu Vu  
Examiner  
2871

  
ANDREW SCHECHTER  
PRIMARY EXAMINER